

## **REMARKS**

### **Claim Objections**

Claim 40 is rewritten in independent form.

### **Rejection of the Claims Under 35 U.S.C. §112, second paragraph**

(Item numbers correspond to the numbers for each issue in the Office Action)

1. Claim 43 is amended, whereby the rejection is moot.
2. Claim 1 is amended as recommended by the Examiner, whereby the rejection is moot.  
Claim 1 is further amended in accord with the disclosure in the paragraph spanning from page 18 to page 19.
3. The features of claim 44 are incorporated into claim 17, overcoming the rejection.
4. The term "heteroalkyl" is rejected, but such term is not present in any of the claims.
5. The term "aliphatic" is defined by the IUPAC Compendium of Chemical Terminology, 2<sup>nd</sup> Edition (1997), as "acyclic or cyclic, saturated or unsaturated carbon compounds, excluding aromatic compounds." See IUPAC Compendium of Chemical Terminology, Electronic version, <http://goldbook.iupac.org/A00217.pdf> (Copy attached.) Thus, the term clearly includes cyclic compounds. As such, one would understand this term "cycloaliphatic" to mean a cyclic aliphatic compound, which excludes the acyclic aliphatic compounds. One of ordinary skill in the art would understand that possible compounds under the meaning of the term "cycloaliphatic" are, for example, cycloalkyl and cycloalkenyl compounds. The claim language is definite and is well understood by those of ordinary skill in the art.
6. The term "heterocycloaliphatic" is also clear to one of ordinary skill in the art. It is a "cycloaliphatic" compound as defined above with at least one heteroatom located in the cycle. Accordingly, one of ordinary skill in the art would understand that possible compounds under the meaning of the term "heterocycloaliphatic" are heterocyclyl and heterocyclenyl compounds. In this regard attached are the IUPAC definitions of "heterocyclyl groups" and "heterocyclic compounds" as defined by the IUPAC Compendium of Chemical Terminology, 2<sup>nd</sup> Edition (1997). See IUPAC Compendium of Chemical Terminology, Electronic version, <http://goldbook.iupac.org/H02799.pdf>, and IUPAC Compendium of Chemical Terminology, Electronic version, <http://goldbook.iupac.org/H02798.pdf>, respectively. (Copies attached.) The

meanings of these terms are clear to one of ordinary skill in the art as supported by the attached definitions.

7. The alternative groups objected to are defined by variables which are defined below the formula.

8. The term "Me" is defined as "methyl." Additionally, the term "Ph<sub>2</sub>" standing for two phenyl groups, i.e., (C<sub>6</sub>H<sub>5</sub>)<sub>2</sub>, is changed to (C<sub>6</sub>H<sub>5</sub>)<sub>2</sub> to further clarify claim 14.

9. Claim 17 is amended as suggested by the Examiner.

10. The structure of the formula is amended as recommended by the Examiner to further clarify the same.

11. The Office Action inquires about the meaning of the term "ditertiary diphosphine." In this regard attached is the definition of "phosphines" as defined by the IUPAC Compendium of Chemical Terminology, 2<sup>nd</sup> Edition (1997). Phosphines are defined as "PH<sub>3</sub> and compounds derived from it by substituting one, two or three hydrogen atoms by hydrocarbyl groups R<sub>3</sub>P . RPH<sub>2</sub> , R<sub>2</sub>PH and R<sub>3</sub>P (R ≠ H) are called primary, secondary and tertiary phosphines, respectively. A specific phosphine is preferably named as a substituted phosphane, e.g. CH<sub>3</sub>PH<sub>2</sub> methylphosphane." See IUPAC Compendium of Chemical Terminology, Electronic version, <http://goldbook.iupac.org/P04553.pdf>. (Copy attached.)

Thus, according to IUPAC nomenclature under phosphines, tertiary phosphines are characterized by the structure R<sub>3</sub>P, wherein R means a hydrocarbyl group. Diphosphines must have two phosphine groups linked together so that they still have hydrocarbyl groups. These diphosphines must have two tertiary phosphine groups so that they represent a diphosphine with two tertiary phosphine groups or a ditertiary diphosphine. The ditertiary diphosphine must have therefore two phosphine groups with two hydrocarbyl groups and one hydrocarbyl group linked to both P atoms. Thus, the formula according to IUPAC nomenclature for ditertiary diphosphine is R<sub>2</sub>P-R-PR<sub>2</sub>, which is the intended definition and which is fully supported by the description, see pages 19-29.

The Office Action cites various compounds and inquires whether they are included in the meaning of ditertiary diphosphine.

To further clarify the meaning of "phosphines," attached is also the definition of "phosphanes" as defined by the IUPAC Compendium of Chemical Terminology, 2<sup>nd</sup> Edition (1997). Phosphanes are defined as "the saturated hydrides of tervalent phosphorus having the

general formula  $P_nH_{n+2}$ . Individual members having an unbranched phosphorus chain are named phosphane, diphosphane, triphosphane, etc. The name of a saturated hydride of phosphorus wherein one or more phosphorus atoms have a bonding number of 5 is formed by prefixing locants and symbols to the name of the corresponding phosphane. Hydrocarbyl derivatives of  $PH_3$  belong to the class phosphines.” See IUPAC Compendium of Chemical Terminology, Electronic version, <http://goldbook.iupac.org/P04548.pdf>. (Copy attached.)

Accordingly, (t-butyl)HP-PH(t-butyl) cannot be included, since it is not a phosphine but a phosphane with a P-P bond and since it does not have two tertiary phosphine groups due to the presence of hydrogen bound to each P atom. The same consideration applies to the structure (Methyl)<sub>2</sub>P-P(Methyl)<sub>2</sub>, which is a basic phosphane structure, having two secondary phosphine groups. The other three structures mentioned by the Office Action with P=C double bonds do not have tertiary phosphine groups because they have only two substituents at the P atoms.

12. Claims 15, 31 and 35 were amended as follows: “directly or via a bridging group.” Applicants thank the Examiner for noticing the error. Support for the amendment can be found, for example, on page 22, see the structures depicted on said page standing for  $R_6$  in the formula (IV) depicted on page 21, illustrating that the phosphine groups can bond directly or via a bridging group to the cyclopentadienyl ring.

13. Claim 16 is amended as suggested by the Examiner.

14. Claim 18 is amended to further clarify the claim.

15. In claim 19, the Examiner inquires what is a “complex acid” in the definition of  $A_2$ . However, what is defined in claim 19 is “an anion of ... complex acid.” The meaning of  $A_2$  is clear to one of ordinary skill in the art based on the disclosure which teaches the meaning of the term by providing a list of exemplary anions on page 35, lines 14-16. A new claim is added which recites the specifically identified anions in the specification on page 35, lines 14-16.

16. Claim 19 is amended to change “A” to “ $A_2$ .” This is the correction of an obvious error.

17. The term “ $X_8$  and  $X_9$  stand for allyl or 2-methylallyl” is deleted from claim 19, which overcomes the rejection.

The rejection to claims 1, 2, 4, 8-19, 29-32, 34-37 and 43-45 are overcome by the amendments to the claims. Support for the amendments can be found, for example, on pages 1, 2 and 7 of the specification.

Reconsideration is respectfully requested.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,



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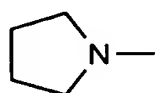
**aliphatic compounds**

Acyclic or cyclic, saturated or unsaturated carbon compounds, excluding *aromatic compounds*.

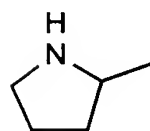
1995, 67, 1313

**heterocyclyl groups**

Univalent groups formed by removing a hydrogen atom from any ring atom of a *heterocyclic compound*. E.g.



pyrrolidin-1-yl



pyrrolidin-2-yl

See *organyl*.  
1995, 67, 1340

**heterocyclic compounds**

Cyclic compounds having as ring members atoms of at least two different elements, e.g. quinoline, 1,2-thiazole, bicyclo[3.3.1]tetrasiloxane.

See *homocyclic compounds*, *carbocyclic compounds*.

1995, 67, 1340

**phosphanes**

The saturated hydrides of tervalent phosphorus having the general formula  $P_nH_{n+2}$ . Individual members having an unbranched phosphorus chain are named phosphane, diphosphane, triphosphane, etc. The name of a saturated hydride of phosphorus wherein one or more phosphorus atoms have a bonding number of 5 is formed by prefixing locants and  $\lambda^5$  symbols to the name of the corresponding phosphane. Hydrocarbyl derivatives of  $PH_3$  belong to the class phosphines.

1995, 67, 1357



**phosphines**

$\text{PH}_3$  and compounds derived from it by substituting one, two or three hydrogen atoms by hydrocarbyl groups  $\text{R}_3\text{P}$ ,  $\text{RPH}_2$ ,  $\text{R}_2\text{PH}$  and  $\text{R}_3\text{P}$  ( $\text{R} \neq \text{H}$ ) are called primary, secondary and tertiary phosphines, respectively. A specific phosphine is preferably named as a substituted phosphane, e.g.  $\text{CH}_3\text{PH}_2$  methylphosphane.

See *phosphanes*.

1995, 67, 1357